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TORREYA

A Monthly Journal of Botanical Notes and News

JOHN TORREY, 1796–1873

EDITED FOR

THE TORREY BOTANICAL CLUB

BY

MARSHALL AVERY HOWE

AND

PHILIP DOWELL

Volume VII.

NEW YORK

1907

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Page 8, 6th line from bottom, *for* recurring, *read* recurving.

Page 28, 2d line from bottom, *for* Smith, T. E., *read* Smith, J. E.

Page 32, 25th line, *for* colors, *read* colours.

Page 56, 25th line, *after* by, *insert* 8.

Page 72, 22d line, for *Juncus subterminalis*, read *Scirpus subterminalis*.

Page 197, 2d line from bottom, for *Cheilanthus* read *Cheilanthes*.

Page 213, 17th line, for *Crategus*, read *Crataegus*.

Page 223, 23d line, *for* Kauffmann, *read* Kaufman.

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A MONTHLY JOURNAL OF BOTANICAL NOTES AND NEWS

EDITED FOR

THE TORREY BOTANICAL CLUB

BY

MARSHALL AVERY HOWE AND PHILIP DOWELL

JOHN TORREY, 1796–1873

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Vol. 7 No. 1

TORREYA

January, 1907

SOME AFFINITIES OF THE PHILIPPINE FLORA

By C. B. Robinson

While all of the botanical papers which have been issued from time to time by the Philippine Bureau of Science and its predecessors have contributed greatly to our knowledge of the flora of the islands, one of the most recent * contains an introduction of such exceptional interest as to call for special notice.

It is hardly too much to say, that at the beginning of the American occupation information on this subject was drawn almost entirely from two sources, the great collection made by Hugh Cuming in the years 1835–40, and the work of the resident Spanish botanists. Cuming is said † to have taken back with him to England about 130,000 sheets of dried plants, and he also introduced into cultivation a number of the more striking orchids. His collection numbers exceeded 2,400, but they were not exclusively Philippine, some coming from Singapore and the Malay peninsula, and a very few from Sumatra. So far as their distribution between these larger geographical areas is concerned, the facts have long been definitely known; and although many species from this source have been wrongly credited to the Philippines in the past, and occasionally still are, this part of the problem has no longer any difficulties for a careful student. A list further exists purporting to give the locality for each plant, but these data have been shown ‡ to be incorrect in so large a proportion of the few cases where other evidence was available that the list must be held unreliable as a basis for dividing the

* Elmer D. Merrill, New or noteworthy Philippine plants, V. Philipp. Jour. Sci. 1: Suppl. (3) 169-246. 15 Au 1906.

† Jour. Bot. 3: 325. 1865.

‡ Jour. Bot. 24: 59, 60. 1886.

[No. 12, Vol. 6, of Torreya, comprising pages 241–272, was issued December 15, 1906.]

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archipelago into its floral provinces. Fortunately all necessity for depending on it is rapidly disappearing.

With the exception of Vidal and Loher, the Spaniards and the collectors other than Cuming have failed to furnish any substantial additional information on this point.

Blanco's *Flora de Filipinas*, of which the first edition appeared in 1837, described many species and even genera as new and identified the remainder with those of other regions. Many of his species and a few of his genera were good, but the descriptions were often incomplete and sometimes inaccurate, and long proved a stumbling-block in the path of European systematists, who attempted to correlate them with the Malayan and continental floras. One of Mr. Merrill's greatest achievements lies in the work done towards clearing up these species, and it may now be said that nearly all of them are at last satisfactorily known.

The most comprehensive treatment of this flora as a whole is the *Novissima Appendix*, published as a part of the third edition of the *Flora de Filipinas*. This is the work of two authors of very unequal merit. Naves, who did most of the monocotyledons, was capable of identifying and enumerating exotic species as Philippine, by the leaves alone or on the reports of the natives, even recording in a few cases orchids from the Andes or western Africa, although he failed to find a majority of those collected by Cuming on his own island. The other author, Fernandez-Villar, was evidently a man of profound ability, but in his determinations he constantly referred Philippine to Malayan or Indian species, wrongly in very many cases. Except where they had been represented in Cuming's and other collections and formed the bases of descriptions, he so far ignored the endemic species that he added a bare half dozen, whereas in the last four years some six or seven hundred have been published as new, and many others so diagnosed will doubtless appear shortly.

It should be remembered that these Spanish authors had either little or no material from outside for comparison, that they sent no specimens to outside herbaria to be named, and that if they preserved any material it has disappeared.

The only Spaniard to appreciate the necessity for such assistance

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was Sebastian Vidal, who sent or took to Kew about 4,000 numbers, many of them gathered in the hitherto unexplored Benguet region of northern Luzon, whence have come so many of the most interesting recent discoveries.

These and the other rich collections in the Kew herbarium enabled Rolfe,* in 1884, to publish what has been till now the only important paper upon the affinities of the Philippine flora.

In the meantime explorations elsewhere have done much to reveal the secrets of the most nearly related regions. This is notably true of Henry's large collections in central and western China and in Formosa, and of Koorders' work in Minahassa, or northeastern Celebes. But the results of Loher's splendid Philippine collections have never been published, except as regards occasional groups.

The great energy with which exploration has been carried on in many districts in the Philippines and the large quantity of material thus obtained, have made it possible for Mr. Merrill to preface the paper here noted with a discussion of two sets of affinities, those with Celebes on the south, and those with Formosa, China, the Himalayas, and Japan on the north and west.

From his enumeration it appears that there are now over 50 species known from the Philippines and Celebes and nowhere else, and another 25 that extend from the Philippines through Celebes to more distant islands. Several further cases are cited where Philippine species have striking affinities with those of Celebes but fall short of specific identity. It may be worth noting that although some of these belong to the southern Philippines, others are widely distributed throughout the archipelago.

Far different is the case with the northern or semi-tropical affinities, for these with few exceptions are found in the flora of the Benguet and Lepanto-Bontoc provinces, the mountainous regions of northern Luzon. This list is so much more complicated in its nature that it is not easily summarized; but again over 50 species are known to be specifically identical with those of more northern countries, and an equal number of additional cases are cited where affinities lie definitely in this direction.

* Jour. Linn. Soc. 21: 283–316. *pl. 10.* 1884.

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The large collection made for the New York Botanical Garden by Mr. R. S. Williams bears similar testimony to these facts; and the present indications seem to be, that when northern Luzon is fully explored, the most numerous cases of specific identity may be as would be expected with Formosa, but the more interesting and instructive cases with the hill district comprising part of southwestern China and northeastern India.

Bornean relationships are not discussed, owing doubtless to the less advanced state of exploration in Mindoro and Paragua than in Luzon and Mindanao, but these should prove equally interesting.

NEW YORK BOTANICAL GARDEN.

COASTAL-PLAIN AMBER

BY EDWARD W. BERRY

Recent discussions of the occurrence of amber in the Cretaceous deposits of the Atlantic coastal plain seem to have overlooked the fact that amber was well known to some of the earlier geological explorers in this region and is frequently mentioned from a number of different localities. Professor John Finch, an Englishman, who visited southern Maryland as well as parts of the intervening region northward as far as Marthas Vineyard during the first quarter of the last century, seems to have been a keen observer and close thinker. On the eve of his departure for England he read a paper before the Philadelphia Academy which was subsequently published in the *American Journal of Science* under the title "Geological Essay on the Tertiary Formations in America." * Aside from the distinction of casting discredit on the term "Alluvial" which had been applied to the coastal plain deposits collectively, his essay contains a number of interesting suggestions such as that relating to the extension under Long Island of the equivalents of the Plastic clays of New Jersey. The present Cretaceous deposits are included in his "Plastic Clay and Sand Formation" which he considered of Tertiary age, one of his reasons for this being the presence of amber which he assumed

*Amer. Jour. Sci. 7: 31-43. 1824.

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to be of the same age as that of the Baltic. In speaking of the amber, which was my reason for mentioning Finch's work, he says that the lignites of the Plastic Clay and Sand Formation usually contain it, and among the localities mentioned are Marthas Vineyard, the Delaware River below Bordentown, N. J., Cape Sable, Md., etc. Some of these localities Finch visited, some he reports on the authority of Troost, Vanuxem, and others.

In a recent paper * the writer mentioned amber as constituting one of the characteristics of the laminated lignitic beds which mark the transition to the typically marine deposits of Upper Cretaceous age. These laminated clays and sands constitute what is known as the Magothy Formation, the name having been suggested by the typical exposures at Cape Sable on the Magothy River in Maryland, the classic American amber locality, first described by Troost nearly one hundred years ago (1821) in the third volume of the *American Journal of Science.*

It is not intended to attempt an exhaustive enumeration of the older literature, which has already been done †; it will suffice to point out that scattered through the works of Vanuxem, Morton, and other contemporary writers will be found quite a number of references to the occurrence of amber, most of which seem to have heretofore escaped attention.

In studying these Cretaceous deposits during the past few years the writer has observed amber at a number of points, of which the following may be enumerated. In New Jersey, amber was found at Cliffwood Bluff on Raritan Bay; at the pits of the Cliffwood Brick Company on Whale Creek; in the pits about one-fourth of a mile west of the Long Branch Railroad on Whale Creek, where there is little lignite associated with it; near Morgan on Cheesequake Creek, where the amber is very plentiful and the drops are of considerable size. On the Delaware River amber is disseminated through the Magothy sands in the vicinity of Kinkora, N. J.

In Delaware, the sands along the Chesapeake and Delaware

* Ann. Rep. State Geol. N. J. 1905: 137. 1906.

† Hollick, Amer. Nat. 39: 137–145. 1905.

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Canal near High Point contain scattered drops of amber; and here again it is not in immediate association with lignite, although lignitic layers are near at hand. This locality is believed to be the only one mentioned in this connection which is not new, it having been described in 1830 by Morton, who records lignite and teredo-bored logs and amber beneath sands with marine molluscs, found during the digging of this canal. Farther south, amber occurs in the Cretaceous near Blackmans Bluff on the Neuse River and near Parker Landing on the Tar River, both localities in North Carolina. At nearly all of these localities charred wood seems to be present in more or less abundance, as was noticed by Hollick in connection with the Staten Island deposits. Extensive search in the Raritan Formation of New Jersey during the past summer, while disclosing much lignite and some charred wood, failed to yield any traces of amber, which seems to be so common a feature of the overlying Magothy beds.

MARYLAND GEOLOGICAL SURVEY,
BALTIMORE, MD.

SHORTER NOTES

TWO UNDESCRIBED SPECIES OF COMOCLADIA FROM JAMAICA.—**Comocladia cordata** sp. nov. A tree, about 15 m. high, glabrous throughout. Leaves about 2 dm. long; leaflets about 13, ovate to oblong-lanceolate, firm in texture, dull green, slightly paler beneath than above, strictly sessile, entire-margined, cordate at the base, acute or short-acuminate at the apex, 5–9 cm. long, 2.5–4 cm. wide, the veins diverging from the midvein at nearly right angles and curving upward; lower leaflets smaller than the upper ones, the pairs distant; panicles as long as the leaves or shorter, about 8 cm. broad, their branches very slender; flowers numerous, purple, 1.5 mm. wide; pedicels filiform, 1–3 mm. long.

Rocky wooded hill, Troy (Britton *640*). Nearest to *C. integrifolia* Jacq.

Comocladia velutina sp. nov. A tree, 6 or 7 m. high, the young twigs, foliage and panicles densely brown-velutinous. Leaves about 2 dm. long; leaflets about 13, oblong, rather firm in texture, paler beneath than above, blunt and rounded at the apex, truncate or subcordate at the base, slightly repand on the

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margin, 2–7 cm. long, 4 cm. wide or less, very shortly petioluled, the lower pairs much smaller than the upper; petiolules 2 mm. long; panicles as long as the leaves or shorter, the branches slender; flowers dull crimson; fruits oblong, very shortly stalked, 1 cm. long, 6 or 7 mm. in diameter.

Great Goat Island (Harris *9208*). Perhaps nearest related to *C. pubescens* Engler.

N. L. BRITTON.

A NEW BLACKBERRY FROM MASSACHUSETTS AND RHODE ISLAND. — On August 1, 1906, I found a new blackberry in Rehoboth, Massachusetts. It is decumbent but has a large, strong, angled stem, is fearfully armed and well branched. The station is near the Seekonk line on the trolley from Providence, R. I., to Taunton, Mass. It is abundant over an acre or more of rich land, now in pasture, and holds its own well in spite of the vigorous trimming given it by the cows. But I found no more in that locality except one plant in Seekonk. Two days after, however, I found it at Rocky Point, R. I., near the junction of the electric roads. Here it was very abundant, just ripe, and the excursionists found it good eating. The pastures and mowings, unused but "for sale," make it a good home. The fruit is abundant, of good size and flavor. Care is required, however, in walking in such lots, for the strong branches are continually tripping one, and the strong prickles take hold. For four miles it occurred along the road to Providence, the last station being in a pasture. Darkness stopped the search. Afterward I found it in Portsmouth, R. I.; in Massachusetts, at Fairhaven, near the garden of H. H. Rogers, the oil magnate, and very abundant on his grounds, also at Wilbur Point; at Mattapoisett, on the electric road, while waiting at a switch west of the village; in Bridgewater, in a pasture near the Normal School; and in Plymouth, beyond Hotel Pilgrim.

Rubus multispinus sp. nov.

New canes. — Stems green, large and strong, often 0.375 inch in diameter, 4 to 8 feet long, nearly erect at first, soon decumbent and partly trailing, with numerous long branches, glandless but slightly pubescent, none noticed tipping. Prickles for-

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midable, numerous and large, about 13 to an inch of stem, 0.25 inch long on the main axis and set at a pronounced backward slant, smaller on the branches and often hooked, set in lines more or less regular on the angles. Leaves large, mostly 3-foliolate, many or all on the main axis and often some on the branches 5-foliolate, yellow-green, with abundant appressed hairs on the upper surface, quite pubescent below. Leaflets broad, the middle one often nearly orbicular, short-pointed, the side ones also broad and more or less 1-incised, or if divided the side leaflets rhomboidal and pointed at each end and the basal ones similar but smaller; outline finely somewhat doubly serrate-dentate, otherwise nearly entire. Petiole and petiolules large, grooved, somewhat pubescent, strongly armed with three rows of numerous very stout and hooked prickles, which are continued into the point of the leaf, the petiolule of the middle leaflet often 1 inch long, the other leaflets nearly or quite sessile.

Old canes. — Stems greenish, stout, hard, prickles intact. Second year's growth consisting of short fruit-branches from 7 inches to 2 inches long, well graded, tipped with inflorescence, one from each old leaf-axil, axis of branch zigzag, angled, fine-hairy, armed with short, stout, hooked prickles. Leaves not numerous, the lower 3-foliolate, the upper unifoliate; leaflets rather broad, very coarsely serrate-dentate, often incised-dentate, the unifoliate ones often 2-incised, similar in color and pubescence to those on new canes. Inflorescence cymose-racemose, of 4 to 8 flowers on stout pedicels, fine-hairy, well armed with hooked prickles. Flowers not seen. Fruit ripening early in August, abundant, short-cylindric with large drupelets; a large one measuring 0.75 inch high by 0.69 inch broad and having 30 drupelets, each 0.22 inch in diameter. Type station: Rocky Point, Rhode Island.

In open dry places.

This species has the appearance of a high blackberry in its leaves and angled stem, round stems being commonly characteristic of recurring and decumbent forms. It trails over walls and fences and alone makes a low hedge of the densest kind. The fruit is ripe considerably earlier than that of *R. Andrewsianus* Blanchard and much earlier than that of *R. alleghaniensis* Porter.

W. H. BLANCHARD.

WESTMINSTER, VERMONT.

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REVIEWS

Juvenile Forms and Flower Maturity *

During a residence in West Australia, Diels found the relation between vegetative growth and generative maturity subject to change and became acquainted with the conditions that correspond to the phases of these changes. He found a large number of cases in which flowering occurred in juvenile forms. A search in the literature showed that this "abnormality" is far-reaching and calculated "to throw light upon a new side of form-diversity in the plant kingdom."

His book does not attempt a complete enumeration of such cases but endeavors, by typical examples, to illustrate the many-sidedness of the question.

The first chapter, entitled, "*Die Bedingtheit der Blütenreife*," discusses various explanations that have been offered as to the conditions of flowering. The older theory of Moebius (1847) was that every plant species which, through heredity, possesses fixed characters, produces flowers at a definite age or phase of its development. Diels, however, agrees with the view more recently expressed by Klebs (1904), "that flower formation by phanerogamous plants presents the same problem in principle as does the sexual reproduction of algae, or the fruiting of the higher fungi. * * * "I hold," says Klebs, "that a quantitative increase of the concentration of organic material with all its physical and chemical consequences plays an important rôle in the transition from growth to reproduction." "The external circumstances," says Diels, "either inhibit or accelerate, according as they interfere with or favor, the internal conditions necessary to flowering." Experimental researches on the problem have been few, but Diels believes that a new review of the cases hitherto published of flowering in a very early developmental stage will not be without its value.

Chapter II, "*Das Verhältniss der Blütenreife zur vegetativen Entwickelung in seiner Wandelbarkeit*," gives citations from literature, presenting cases illustrating the relation of flowering to

* Diels, L. Jugendformen und Blütenreife im Pflanzenreich. Pp. 1–130. *f. 1–30.* Berlin: Gebrüder Borntraeger. 1906.

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vegetative development in its changes. The cases cited indicate that there is a "vast independence of generative maturity and vegetative growth. Of course a definite 'nutrition-minimum' is absolutely necessary. Beyond this, the way for generative maturity, flowering (*Die Blütenreife*), arises independently. Every favoring constellation is able to induce it, even though vegetative development be insignificant, and though the age be juvenile. Practically, all cases of 'early blooming,' or on the other hand of 'nanism,' signify how flowering is favored 'by dryness or by the disturbance of the nutrition conducive to growth.'"

In Chapter III, "*Helikomorphie und Blütenreife bei heteroblastischen Pflanzen*," the author refers to Goebel's classification of development into "heteroblastic," where the differences between the configuration of the plant at different stages in its vegetative development are very small, and "homoblastic," where these differences are large. Goebel, in his "Organography," has already pointed out that no sharp line can be drawn between homoblasts and heteroblasts. Juvenile forms (*Jugendformen*) and subsequent forms (*Folgeformen*) have been recognized. Diels proposes to apply to both the general term "helikomorph." "I call a form a '*helikomorph*,'" he says, "which appears at a definite phase of vegetative development, that is, at a definite (relative) age (Gr. ἡλικία = age)." The term signifies, in general, the vegetative configuration dependent upon the phase or age.

Helikomorphs are classed as: 1. Heteroblasts with arrested primary leaves; 2. Heteroblasts with arrested subsequent leaves (*Folgeblättern*); 3. Heteroblasts with helikomorphs of indeterminate characters. The greater portion of the book (pp. 23–108) is occupied with illustrations of the various classes, under the subheads, (*a*) cases conditioned by external conditions (*exogener Bedingtheit*), including seasonal dimorphism; (*b*) cases whose conditions are unknown.

The phylogenetic significance of helikomorphs is discussed in Chapter IV. "After the attainment of a certain minimum of vegetative preparation, flowering can occur in very diverse phases of development and bring about the termination of vegetative unfolding."

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"When this happens within heteroblastic species or genera, then there follows a corresponding difference in the entire morphological expression of the individual forms. We rank these forms as individual variations if observation or experiment demonstrates their connection with the 'normal.'" (*Limosella* presents an example of this.) "We call them species if such experience is wanting. But often these standards are uncertain." One recalls very distinctly an example in the case of *Campanula rotundifolia.* Of their early-blooming form, Goebel rightly says, they would, "in another botanical district and occurring in larger number, be considered without hesitation as a different species from *Campanula rotundifolia.* There is not the slightest doubt but that in fact many so-called 'species' bear the same relation to other species as the Schleissheim *Campanula* (p. 86) does to the 'normal' plants, that they also stand mutually in the relation of helikomorphic forms."

"Often phase-forms prove themselves to be 'epharmons' (*Epharmosen*). Theoretically they must quite frequently begin as such, because the relation between vegetative growth and reproduction is so labile, and because external conditions are in continual change."

"In each case these epharmonic phase-forms will endure as long as the determinative conditions remain nearly similar. They may, indeed, exist under circumstances of very long duration. And thereby they acquire the possibility of becoming fixed through heredity and of losing more and more the primary strict dependence upon external circumstances."

"This case has found realization in many similar forms. * * * The Australian acacias form their phyllodes even in our houses. I have seen examples of *Eucalyptus Risdoni* that escape from culture of European gardens and bear inflorescences as in their home locality."

"Heredity has also been demonstrated in the case of the 'seasonal dimorphic' species. Von Wettstein has cultivated *Euphrasia Rostkoviana* and *E. montana* through three years in the botanical garden at Prague under entirely similar external conditions. The two plants proved themselves fully constant in

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all their characters, in their whole behavior." (Ber. Deutsch. Bot. Ges. **13**: 307. 1895.) "Now if Von Wettstein's plausible assumptions concerning the established causes of this dimorphism are correct, then even the state of heredity is here a relatively very young epharmon (*Epharmose*): for only since the development of an alpine habit (*Alpenwirtschaft*) through regular mowing would the effective forces have been in action. If only a phylogenetically considered short period suffices in this case to fix the form as hereditary, by how much more would nature itself, which operates over such immeasurably long periods, be in a condition to do it. Through heredity numerous helikomorphic structures obtain that independence which establishes new phyletic courses for their posterity. They become, then, 'phylembryos' of new developmental courses. Their leaf-form, fixed in a definite direction, undergoes either epharmonic or autogenous variations, a new strain is developed out of the former phase-form of the old stock."

Chapter V treats of similar phenomena in the animal kingdom, and Chapter VI is a résumé of the preceding chapters. The following is a free translation of Chapter VI, with omission of the examples cited:

"The generative maturity of plants is not unchangeably bound up with a definite stage of vegetative development. Of course it presumes a certain minimum of previous vegetative work; if this is exceeded, however, there follows *a broad zone of variation for the appearance of the flowers.* The regulation of this variation takes place by means of complex and diverse conditions. *External circumstances* have an important share in it, in the case of cryptogams (Klebs) as well as in the case of flowering plants. Of this we know but little; but it is manifestly evident that *dryness and a qualitative variation of nutrition favor flowering, opposite conditious are unfavorable.*

"The vegetative ontogeny of plants is consummated through the coöperation of autogenous and external (*exogener*) factors. The ground work comprises diverse potentialities. Thus it postulates no rigid configuration. At first the environment is rather 'the determining factor as to which of the various possible

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developmental forms becomes realized.' *This regulation by means of the environment is clearly realized in the case of heteroblastic ontogenesis.*

"As in the case of flowering, the insight into the associations which we have hitherto obtained is rather limited. But we see that the organization of subsequent leaves (*Folgeblätter*) becomes more abundant if heat and moisture are increased. And we recognize a restriction in this respect by shortening the growth period, by dryness, and by a lowering of the temperature.

"Thus ontogeny varies with the quality and degree of external factors. The finished figure of the organism is the product of vegetative ontogeny and of flower-maturity: and *both factors are variable.*

"And furthermore their variability is not of the same kind nor similarly ordered. Of course the vegetative form-development ceases for the most part with flowering; but that is a stage, however, where the two courses of development, the vegetative and the generative, are indissolubly connected. Otherwise they are free and independent of each other. Their relation is capable of every variation. The leaf-succession in its phase (helikomorphy) varies after its own fashion. Flowering varies in its own way.

"In this combination of two variable factors into the unity of the flowering form, lies a powerful impetus to the increase of form-diversity in the plant kingdom. For the circumstances that help to regulate the leaf-succession and flower-maturity vary with the change of climate in time and place. In their ultimate effects they produce the geographically local races (*Arten*) and in the course of time favor the development of new species. Their product attains to heritability, and thereby new strains with new possibilities become established.

"In this relation of consecutive vegetative stages and flowering, it is expressed with clear emphasis how endlessly variable form is in the plant kingdom. Even the few external factors that we perceive, produce an interminable maze of possibilities. We are led indeed to the confession to which Klebs was led in another connection: 'The typical or customary development

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signifies only a small, limited portion of the complement of possible forms.' Such utterances, often enough already expressed, are, notwithstanding the clear conception of species of our day, still far remote from fruitful effect."

The book, on the whole, is very suggestive along several lines. It the first place, it shows how possible it is to arrive at new and possibly important results merely by a reëxamination and reconsideration of the rich material already collected both in herbaria and in published literature. In the second place, it emphasizes the great desirability of collecting and preserving in herbaria unusual or abnormal forms, as well as so-called "typical" specimens. In the third place, it gives emphasis to the value and absolute need of experimental pedigree culture, at least as ancillary to morphological and systematic work, for the reason that origin of species is more a physiological than a morphological problem, and can never be solved by employing alone the methods of comparative anatomy.

Finally, added importance is attached to the "heliokomorphs" as material upon which selection may act in the development of new groups of the rank of species. In this connection, also, the question of the heritability of acquired characters is forced once more to the front.

The burden of proof still lies with those who deny that species of plants as well as of animals, are formed in more than one way. As has been recently often stated, it is only by a combination of ecological and physiological studies that we may hope for a proper interpretation of the facts of comparative anatomy and ultimately of the method of organic evolution.

C. Stuart Gager.

Postelsia, reviewed in Torreya 6: 250. December, 1906, may be obtained from Professor Josephine E. Tilden, University of Minnesota, Minneapolis, Minn.

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PROCEEDINGS OF THE CLUB

November 13, 1906

The meeting of Club was called to order by President Rusby at 8:15 o'clock, at the American Museum of Natural History. Thirteen persons were present.

After the minutes for October 31 were read and approved, the name of Dr. H. E. Hasse, of Santa Monica, California, was proposed for membership.

The resignation of Mrs. Ada Watterson Yerkes, Cambridge, Mass., was read and accepted. On motion the secretary cast the vote of the club electing Dr. H. E. Hasse to membership.

The resignation of Dr. N. L. Britton, as chairman of the program committee, was read and accepted, and the chairman appointed Dr. M. A. Howe as chairman of that committee. The other members are Professor L. M. Underwood and Mrs. E. G. Britton.

The following scientific program was presented:

"Account of a Collecting Trip in the Adirondacks and in the Catskill Mountains," by Dr. Per Axel Rydberg. Dr. Rydberg gave an interesting account of botanical field studies and collecting in the regions mentioned, giving special attention to the blackberries. The talk was richly illustrated by herbarium specimens collected on the trip.

Dr. Augustine Henry, of London, who was visiting New York, gave a very interesting account of some features of the flora of China, pointing out its richness and great diversity, which are correlated with diversity of topography and climate, and emphasizing both the slight amount of collecting that has as yet been done there and the important results to be obtained by ecological and systematic studies in that region. As an illustration he called attention to the fact that several genera recorded in existing manuals as monotypic are known to be represented in China by several distinct species.

Adjournment was at 10 o'clock.

C. Stuart Gager,
Secretary.

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NOVEMBER 28, 1906

The Club met at the museum building of the New York Botanical Garden, at 3:30 p. m. In the absence of President Rusby, Dr. L. H. Lighthipe was called to the chair. Twenty-two persons were in attendance.

The minutes for November 13 were read and approved, and the following names were presented for membership:

Ulysses O. Cox, Terre Haute, Ind.

Harold W. Pretz, 368 Union St., Allentown, Pa.

The amendment to Article XIV of the Constitution relating to annual dues, presented at the regular meeting of the Club on October 31 and published in the weekly Bulletin of the New York Academy of Sciences and Affiliated Societies for November 19, 1906, came up for discussion. After a brief discussion it was voted to lay the motion on the table.

The secretary read a communication to the president of the Club from the member for botany of the committee of the New York Academy of Sciences appointed to arrange for an exhibit to be held at the American Museum of Natural History, on December 28 and 29, to illustrate recent advancement in different departments of science. The Club was invited to send material for the exhibit. On motion the secretary was appointed to arrange for the Club's participation in the exhibit.

On motion it was voted to omit the second regular December meeting of the Club which would fall on the 26th of the month.

The following scientific program was presented: "Some Costa Rican Orchids," by Mr. George V. Nash.

The speaker referred to the little-known country of Costa Rica and the desirability of securing material from there. Mr. Wm. R. Maxon, of the United States National Museum, during the early part of the year, made an exploration in this region in the interests of the New York Botanical Garden and brought back with him not only a valuable collection of herbarium material but also a large collection of living plants, representing mainly the orchid, fern, bromeliad, and cactus families. This material, owing to the care taken by Mr. Maxon in collecting and packing it, arrived in excellent condition. A great many orchids

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were among the lot, and several of these have already flowered, revealing new and interesting species. Living material is especially desirable in this family of plants, as the color and shape of the flowers play a large part in their classification, and these characters are difficult to determine from dried material. The genera *Pleurothallis*, *Elleanthus*, and *Zygostates*, have each already yielded one species new to science. The new species of *Zygostates* is a particularly interesting discovery, as it not only proves to be a species hitherto unknown but also brings into the flora of North America a genus known formerly only from Brazil and Peru. Among other things worthy of note are: *Warscewiczella Wendlandi discolor*, originally described and known only from Costa Rica; *Maxillaria iridifolia*, found throughout tropical America but certainly differing much in general appearance from the other members of the genus; and *Cycnoches Rossianum*, originally described from a plant that flowered in cultivation in the Garden of Mr. Ross, at Florence, Italy, in 1889. The origin of this plant was unknown, and it is now interesting to have its home revealed by this collection of Mr. Maxon's. The remarks were illustrated with living plants of the species referred to, supplemented with herbarium specimens, drawings, and material preserved in formalin.

"The Sedges of Jamaica," by Dr. N. L. Britton.

Dr. Britton exhibited specimens of all species of Cyperaceae known to occur on the island of Jamaica, including several species new to that island, collected by Professor Underwood or by himself during a visit to Jamaica in the month of September. He remarked on the distribution of many of these species and on the fact that a number of them are found in the West Indies, only in Jamaica, their further distribution being in Central and South America. This distribution of these sedges is paralleled by that of a considerable number of species in other families, so that the South American relationship of the Jamaica flora is more intimate than that of Cuba, Hayti, or Porto Rico, and it is suspected that this may be an indication of a former land connection between Jamaica and the continent to the west or southwest. Dr. Britton's paper included a complete enumeration of the species now

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known, together with diagnostic keys for their determination, and as much of their synonymy as relates to Jamaican records. No undescribed species were found, but the collections made by recent explorers added a number to those recorded by Mr. Clarke in his monograph of the West Indian Cyperaceae, published in the second volume of Professor Urban's "Symbolae Antillanae."

"Exhibition of Photomicrographs of North American Woods," by Dr. C. Stuart Gager.

Numerous specimens were shown from a collection of photomicrographs of cross-sections of North American woods, recently acquired by the Garden from Mr. James A. Weale, of the firm of Williams, Weale & Co., of Liverpool, England. These photomicrographs are all enlarged ten diameters, thus facilitating comparison. They are of very superior quality, so that many finer elements of the histology of the various woods can be demonstrated under a lens with nearly as great satisfaction as from the original sections. They possess the advantage of being less fragile than the sections themselves and of serving better than these for purposes of demonstration before classes and otherwise. The collection contains representations of practically all North American species.

By way of comparison, specimens were shown of Hough's "American Woods" and of Nördlinger's "Holzquerschnitte."

The Club adjourned at five o'clock.

C. Stuart Gager,
Secretary.

NEWS ITEMS

Dr. John A. Shafer has started on a collecting trip, for the New York Botanical Garden, to the West Indian island of Montserrat.

Dr. Marshall A. Howe returned to New York on January 30 from a botanical expedition to Jamaica. Six weeks were spent in collecting and studying marine algae in the vicinity of Kingston and Montego Bay.

Mr. E. S. Steele, of the United States National Museum, spent a few days, about the first of January, studying the herbarium material in the New York Botanical Garden.

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At the annual meeting of the Torrey Botanical Club, on January 8, the officers of the preceding year were reëlected, and an additional associate editor was added to the editorial staff. An amendment was introduced to increase the number of associate editors to eight instead of seven.

A reception to visiting botanists was given at Schermerhorn Hall on Wednesday evening, December 26, 1906, by the Torrey Botanical Club. It was largely attended and highly successful.

The Board of Managers of the New York Botanical Garden entertained at luncheon the botanists attending the session of the Botanical Society of America held in the Museum of the Garden on Saturday, December 29, 1906.

The American Association for the Advancement of Science held its fifty-seventh meeting in New York City, December 27, 1906, to January 2, 1907. As has been the custom in late years, various affiliated scientific societies held sessions in the same city during the same week. Section G (botany) met in Schemerhorn Hall, Columbia University, on Thursday afternoon, December 27, on Friday morning, and on Monday, with the vice-president, Dr. D. T. MacDougal, in the chair. Dr. Tracy E. Hazen acted as secretary in the absence of Professor F. E. Lloyd. The Friday morning session was a joint one of Sections F (zoölogy) and G, devoted to the discussion of heredity. In the absence of the retiring chairman, Dr. Erwin F. Smith, his vice-presidential address was omitted. Professor Charles E. Bessey was elected chairman of Section G for the next meeting. About 125 botanists were in attendance at the sessions of the Section and of the affiiliated societies.

The Botanical Society of America met in New York City, December 27–31, 1906. The federation of the three societies, the Botanical Society of America, the American Mycological Society, and the Society for Plant Morphology and Physiology, was effected at the first session on Thursday, December 27. The president, Professor F. S. Earle, acted as chairman during the first day; as he was not able to be present at the later sessions, the chair was occupied by the vice-president, Professor Frederic E. Clements. Meetings for the readings of scientific papers were

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held on Thursday, at Schermerhorn Hall, Columbia University; on Saturday, at the Museum of the New York Botanical Garden, when one of the papers was the address of the retiring president, Professor R. A. Harper, on "The Organization of certain Coenobic Plants"; and on Monday, at Schermerhorn Hall. In all, twenty-nine papers were presented. Officers of the new Botanical Society of America were elected as follows: Professor George F. Atkinson, president; Dr. N. L. Britton, vice-president; Professor D. S. Johnson, secretary; Dr. Arthur Hollick, treasurer.

The American Society of Naturalists held its twenty-fourth annual meeting in Schermerhorn Hall, Columbia University, New York City, on the afternoon of Friday, December 28, 1906. The scientific program consisted of a discussion of the biological significance and control of sex, and several of the papers viewed the topic from a botanical standpoint.

The Sullivant Moss Chapter held a meeting on Friday afternoon, December 28, 1906, in Schermerhorn Hall, Columbia University, the president, Mr. Edward B. Chamberlain, in the chair. In the absence of the secretary, Dr. John W. Bailey, Miss Edith A. Warner acted as secretary pro tem. There were exhibits by members of specimens and photographs, and a scientific program of six papers, by Professor A. W. Evans, Miss Annie Lorenz, Mrs. Elizabeth G. Britton, Professor Bruce Fink, Dr. A. J. Grout and Mr. R. S. Williams.

At the American Museum of Natural History, on the afternoon of Saturday, December 29, 1906, occurred the ceremonies attending the unveiling of the busts of American men of science, presented to the Museum by Mr. Morris K. Jesup. Among the busts unveiled was that of Professor John Torrey, and a brief memorial address upon the life and work of Dr. Torrey was delivered by Dr. N. L. Britton. Busts of Alexander von Humboldt and Joseph Leidy, both of whom contributed to the advancement of botanical science, although better known from their work in other fields, were also among the number.

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(1) BULLETIN

A monthly journal devoted to general botany, established 1870. Vol. 33, published in 1906, contained 635 pages of text and 26 full-page plates. Price $3.00 per annum. For Europe, 14 shillings. Dulau & Co., 37 Soho Square, London, are agents for England.

Of former volumes, only 24–33 can be supplied entire; certain numbers of other volumes are available, but the entire stock of some numbers has been reserved for the completion of sets. Vols. 24–27 are furnished at the published price of two dollars each; Vols. 28–33, three dollars each.

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(2) MEMOIRS

The MEMOIRS, established 1889, are published at irregular intervals. Volumes 1–11 and 13 are now completed and Nos. 1 and 2 of Vol. 12 have been issued. The subscription price is fixed at $3.00 per volume in advance. The numbers can also be purchased singly. A list of titles of the individual papers and of prices will be furnished on application.

(3) **The Preliminary Catalogue of Anthophyta and Pteridophyta** reported as growing within one hundred miles of New York, 1888. Price, $1.00.

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BY

MARSHALL AVERY HOWE AND PHILIP DOWELL

JOHN TORREY, 1796–1873

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